UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/327,282	06/04/1999	YUN CHEOL JEONG	8733D.6984	5275

30827 7590 08/07/2002

MCKENNA LONG & ALDRIDGE LLP
1900 K STREET, NW
WASHINGTON, DC 20006

EXAMINER
NGUYEN, KEVIN M

ART UNIT	PAPER NUMBER
2674	

DATE MAILED: 08/07/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/327,282	Applicant(s) JEONG ET AL.	
	Examiner Kevin M. Nguyen	Art Unit 2674	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 May 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-6 and 13-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-6 and 13-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

The request for reconsideration filed on 5/23/2002 is entered. However, the rejection of claims 3-6, and 13-35 are maintained.

Drawings

1. The application having been missed Figure 29 (see page 11, lines 30-31); the formal drawings are required in response to this Office Action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 3, 4, 16-21 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duwaer (US 4,922,240).

4. As to claims 3, 4 and 31, Duwaer teaches an apparatus and a method for driving an active matrix liquid crystal display 10 using double matrix addressing which includes the row scanner 20, and the column data 21 (see figure 2, col. 6, lines 36-37), applying the row scanning lines s(k) and s(j)("k" is odd, "j" is even)(see figure 6(a)(b), col. 11, lines 19-24), applying the video signal Vo(1)...Vo(20) and Ve(1)...Ve(20) ("o" is odd, "e" is even)(col. 6, lines 50-52), $SH|_A$ controls the data signal voltage from 1 to 40 having a width increased with the different time 40ns within the interval 1.6 μs(see Figure 3(b), col. 7, lines 10-11). It would have been obvious to one skill in the circuit diagram to recognize that Vo(1) corresponds to the position of the scanning wire So(1), and Vo(2)

corresponds to So(2), and etc... (see figure 2) with the relative distances 2l-1, 2l, 2l+1, 2l+1 of scanning wire (see figure 7).

5. As to claims 16-18, Duwaer teaches an apparatus and a method for driving an active matrix liquid crystal display 10 using double matrix addressing which includes the row scanner 20, and the column data 21 (see figure 2, col. 6, lines 36-37), applying the row scanning lines s(k) and s(j)("k" is odd, "j" is even)(see figure 6(a)(b), col. 11, lines 19-24), applying the video signal Vo(1)...Vo(20) and Ve(1)...Ve(20) ("o" is odd, "e" is even)(col. 6, lines 50-52), $SH|_A$ controls the data signal voltage from 1 to 40 having a width increased with the different time 40ns within the interval 1.6 μs(see Figure 3(b), col. 7, lines 10-11). It would have been obvious to one skill in the circuit diagram to recognize that Vo(1) corresponds to the position of the scanning wire So(1), and Vo(2) corresponds to So(2), and etc... (see figure 2) with the relative distances 2l-1, 2l, 2l+1, 2l+1 of scanning wire (see figure 7).

6. As to claims 19-21, Duwaer teaches an apparatus and a method for driving an active matrix liquid crystal display 10 using double matrix addressing which includes the row scanner 20, and the column data 21 (see figure 2, col. 6, lines 36-37), applying the row scanning lines s(k) and s(j)("k" is odd, "j" is even)(see figure 6(a)(b), col. 11, lines 19-24), applying the video signal Vo(1)...Vo(20) and Ve(1)...Ve(20) ("o" is odd, "e" is even)(col. 6, lines 50-52), $SH|_A$ controls the data signal voltage from 1 to 40 having a width increased with the different time 40ns within the interval 1.6 μs(see Figure 3(b), col. 7, lines 10-11). It would have been obvious to one skill in the circuit diagram to recognize that Vo(1) corresponds to the position of the scanning wire So(1), and Vo(2)

corresponds to So(2), and etc... (see figure 2) with the relative distances 2l-1, 2l, 2l+1, 2l+1 of scanning wire (see figure 7).

7. Claims 5, 6, 22, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duwaer in view of Matsuura et al (US 6,175,351).

8. As to claims 5, 6, 22, 32 and 33, Duwaer teaches all of the claimed limitations of claims 3 and 4, except for "supplying a scanning signal voltage having a width enlarge in accordance with a distance from a source of the signal wire to the scanning wire." However, Matsuura teaches a related apparatus and a method for driving a TFT-LCD 3 (see figure 14 and 15) which includes the ON period of all the scanning lines starts at the time to, and terminates at gradually delaying times t1, t2, and tm (width enlarged) synchronizing with the video signal (A) having a width increased (in accordance with a distance from a source of the signal wire to the scanning wire). It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize the X and Y driver circuits taught by Matsuura for the X and Y driver circuits disclosed in the active matrix liquid crystal display system of Duwaer because this would minimize the variation in luminance and the flickering, prevent in brightness due to the reduction of the effective display time, and thus the display quality is significantly improved (see col. 23, lines 26-30 of Matsuura).

9. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duwaer in view of Okumura (US 5,568,163).

10. As to claims 13-15, Duwaer teaches all of the claimed limitations of claim 13, except for "supplying a scanning signal voltage have a different width in accordance

with a distance from a source of the signal wire." However, Okumura teaches a TFT-LCD 1 which includes the scanning signal circuit GL1, ...GLn (a width control means) have a different width enlarged of a time period ΔT (see figure 5A to 5F, col. 4, lines 12-19) synchronizing with the video signal (A) having a width increased (in accordance with a distance from a source of the signal wire to the scanning wire). It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize the X and Y driver circuits taught by Okamura for the X and Y driver circuits disclosed in the active matrix liquid crystal display system of Duwaer because this would improve high resolution and the flicker is small (see col. 3, lines 56-58 of Okumura).

11. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duwaer in view of Lee (US 6,064,459).

12. As to claims 23 and 24, Duwaer teaches all of the claimed limitations of claim 23, except for "a plurality of scanning driver integrated circuit, a plurality of data driver integrated circuits." However, Lee teaches TFT-LCD, as is well-known to those skilled in the art (see col. 1, lines 45-47) having a plurality of data line driver integrated circuit packages 40, and plurality of gate driver IC package 60 (see figure 1, col. 1, lines 23-28). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate a plurality of gate driver IC and a plurality of data driver IC taught by Lee into the TFT-LCD driver circuit system disclosed by Duwaer because this would be easy apply to fabricate the driver circuit of LCD device as will be understand by those skill in the art (see col. 4, line 30 of Lee).

13. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duwaer and Matsuura et al, as applied to claim 5, 6 and 22 above, further in view of Lee.

14. As to claims 25 and 26, Duwaer and Matsuura teach all of the claimed limitations of claim 25, except for "a plurality of scanning driver integrated circuit, a plurality of data driver integrated circuits." However, Lee teaches a TFT-LCD, as is well-known to those skilled in the art (see col. 1, lines 45-47) having a plurality of data line driver integrated circuit packages 40, and plurality of gate driver IC package 60 (see figure 1, col. 1, lines 23-28). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate a plurality of gate driver IC and a plurality of data driver IC taught by Lee into the TFT-LCD driver circuit system disclosed by Duwaer because this would be easy apply to fabricate the driver circuit of LCD device as will be understand by those skill in the art (see col. 4, line 30 of Lee).

15. Claims 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duwaer in view of Lee.

16. As to claims 27-30, Duwaer teaches an apparatus and a method for driving an active matrix liquid crystal display 10 using double matrix addressing which includes the row scanner 20, and the column data 21 (see figure 2, col. 6, lines 36-37), applying the row scanning lines s(k) and s(j)("k" is odd, "j" is even)(see figure 6(a)(b), col. 11, lines 19-24), applying the video signal Vo(1)...Vo(20) and Ve(1)...Ve(20) ("o" is odd, "e" is even)(col. 6, lines 50-52), $SH|_A$ controls the data signal voltage from 1 to 40 having a width increased with the different time 40ns within the interval 1.6 μs(see Figure 3(b),

col. 7, lines 10-11). It would have been obvious to one skill in the circuit diagram to recognize that Vo(1) corresponds to the position of the scanning wire So(1), and Vo(2) corresponds to So(2), and etc... (see figure 2) with the relative distances 2l-1, 2l, 2l+1, 2l+1 of scanning wire (see figure 7). Therefore, Duwaer teaches all of the claimed limitations of claim 27, except for "a plurality of scanning driver integrated circuit, a plurality of data driver integrated circuits." However, Lee teaches TFT-LCD, as is well-known to those skilled in the art (see col. 1, lines 45-47) having a plurality of data line driver integrated circuit packages 40, and plurality of gate driver IC package 60 (see figure 1, col. 1, lines 23-28). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate a plurality of gate driver IC and a plurality of data driver IC taught by Lee into the TFT-LCD's driver circuit system disclosed by Duwaer because this would be easy apply to fabricate the driver circuit of LCD device as will be understand by those skill in the art (see col. 4, line 30 of Lee).

17. Claims 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duwaer in view of Matsuura et al.

18. As to claim 34, Duwaer teaches a driving system for driving an active matrix liquid crystal display 10 using double matrix addressing which includes the row scanner 20, and the column data 21 (see figure 2, col. 6, lines 36-37), applying the row scanning lines s(k) and s(j)("k" is odd, "j" is even)(see figure 6(a)(b), col. 11, lines 19-24), applying the video signal Vo(1)...Vo(20) and Ve(1)...Ve(20) ("o" is odd, "e" is even)(col. 6, lines 50-52), $SH|_A$ controls the data signal voltage from 1 to 40 having a width increased with the different time 40ns within the interval 1.6 μs(see Figure 3(b), col. 7, lines 10-11). It

would have been obvious to one skill in the circuit diagram to recognize that Vo(1) corresponds to the position of the scanning wire So(1), and Vo(2) corresponds to So(2), and etc... (see figure 2) with the relative distances 2l-1, 2l, 2l+1, 2l+1 of scanning wire (see figure 7). Therefore, Duwaer teaches all of the claimed limitations of claim 34, except for "a scanning signal voltage have varying widths depending on the distance of the scanning lines from the data signal sources." However, Matsuura teaches a driving system for driving a TFT-LCD 3 (see figure 24 and 25) which includes the ON period of all the scanning lines starts at the time to, and terminates at gradually delaying times t1, t2, and tm (width enlarged) synchronizing with the video signal (A) having a width increased (in accordance with a distance from a source of the signal wire to the scanning wire). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate each scanning wire circuits 70 taught by Matsuura for each row scanning driver circuits 20 disclosed in the AMLCD 10 system of Duwaer because this would minimize the variation in luminance and the flickering, prevent in brightness due to the reduction of the effective display time, and thus the display quality is significantly improved (see col. 23, lines 26-30 of Matsuura).

19. As to claim 35, Matsuura teaches a driving system for driving a TFT-LCD 3 (see figure 24 and 25) which includes the ON period of all the scanning lines starts at the time to, and terminates at gradually delaying times t1, t2, and tm (width enlarged) synchronizing with the video signal (A) having a width increased (in accordance with a distance from a source of the signal wire to the scanning wire). Therefore, Matsuura teaches all of the claimed limitations of claim 35, except for "a plurality of data drivers, a

plurality of gate drivers, and a data signal voltage have varying widths depending on the distance of the data lines from the scanning signal sources." However, Duwaer teaches a driving system for driving an active matrix liquid crystal display 10 using double matrix addressing which includes even and odd row scanner driver circuits 20, and even and odd column data driver circuits 21 (see figure 2, col. 6, lines 36-37), applying the row selection lines g (1)...g (15) (see figure 6(a), col. 11, lines 19-24), applying the video signal (A) having a width increased (see Figure 3(c), col. 7, lines 20-22) in accordance with the position of the scanning wire m2l-1, m2l, m2l+1, and m2l+2 (see figure 7). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate each data wire circuits 21 taught by Duwaer for each row data driver circuits 60 disclosed in the TFT-LCD system of Matsuura because this would improve the quality of the image being displayed while fabricating the driving circuitry at low cost (see col. 7, lines 39-40 of Duwaer).

Response to Arguments

20. Applicant's arguments filed 5/23/2002 have been fully considered but they are not persuasive.

In response to applicant's argument that claim 3 recites "supplying data signal voltages having a width enlarged in accordance with a distance from a source of the scanning signal to the signal wires." Or "there is no indication of an existence of a relationship between data signal voltage widths and a relative location of a scanning wire or signal." Examiner disagrees with this position because Duwaer teaches "the active matrix 10 addressing in which both columns and rows are driven (col. 6, lines 34-

40)." These arguments are not persuasive because it would have been obvious Duwaer teaches a relationship of signal voltage widths on relative positions of scanning signals.

In response to applicant's argument that claim 5 recites "supplying a scanning signal voltage having a width enlarged in accordance with a distance from a source of the signal wire to the scanning wire." Examiner disagrees with this position because the combinations of Duwaer teaches "applying the video signal (A) having a width increased 40 ns (see Figure 3(b)) in accordance with the position of the scanning wire m2l-1, m2l, m2l+1, and m2l+2 (see figure 7)" and Matsuura teaches "the ON periods P1, P2, P3,... and Pm for the scanning lines are longer in this order (col. 23, lines 12-14)."

In response to applicant's argument that claims 5 and 32-34 recite "supplying a scanning signal voltage having a width enlarged in accordance with a distance from a source of the signal wire to the scanning wire." Or "there is no indication of the presence of a relationship between scanning signal voltage widths and relative location of a data signal source," as recited in page 6, lines 10-11. Examiner disagrees with this position because "a relationship between scanning signal voltage widths and relative location of a data signal source" are not claimed in the claims 5 and 32-34.

In response to applicant's argument that claim 35 recites "a data signal voltages have varying widths depending the distance of the data lines from the scanning signal sources." Examiner disagrees with this position because Duwaer teaches "applying the video signal (A) having a width vary 40 ns (see Figure 3(b)) in accordance with the position of the scanning wire m2l-1, m2l, m2l+1, and m2l+2 (see figure 7)."

In response to applicant's argument that claims 13-15 recite " width control means for allowing the scanning signal voltage to have a different width in accordance with a distance from a source of the signal wire." Examiner disagrees with this position because the combination of Duwaer teaches "applying the video signal (A) having a width vary 40 ns for odd and even data lines (see Figure 3(b)) in accordance with the position of the scanning wire m2l-1, m2l, m2l+1, and m2l+2 (see figure 7)" and Okamura teaches the two gate pulses differ in that at least one of a rising edge and a falling edge of one of the two gate pulses differs from that of the other (abstract) for even and odd gate lines."

In response to applicant's argument that claims 23, 27, and 29 recite "a width controller for carrying widths of time periods during which data signals are applied by the data driver integrated circuits to the data lines in accordance with the data lines." Examiner disagrees with this position because combination of Duwaer teaches $SH|_A$ width controller and Lee teaches X and Y driver integrated circuits.

In response to applicant's arguments that claim 25 recite "a plurality of scanning driver integrated circuits, a plurality of data driver integrated circuits; and a controller for varying widths of time periods during which the scanning signals are applied by the scanning driver integrated circuits to the scanning lines in accordance with scanning lines." Examiner disagrees with this position because combinations of Lee teaches a plurality X and driver integrated circuits, and Duwaer and Matsuura teach $SH|_A$ and a write time modulation circuit 82 (width controller as claimed, col. 21, lines 5-7 of Matsuura). In response to applicant's arguments that "The rejection of claims 25 and 26

under 35 U.S.C. 103 as being unpatentable over Duwaer in view of Matsuura, and Okamura..." recited in page 10, lines 3-5. Examiner disagrees with this position because examiner has used Duwaer, Matsuura, and Lee applied for claims 25 and 26 (see the above rejection).

For these reasons, the rejections based on Duwaer, Matsuura, Lee, and Okumura have been maintained.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Kevin M. Nguyen** whose telephone number is **703-305-6209**. The examiner can normally be reached on MON-FRI from 9:00-5:00 with alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richard A Hjerpe** can be reached on **703-305-4709**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered response should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Kevin M. Nguyen
Examiner
Art Unit 2674

RICHARD HJERPE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600